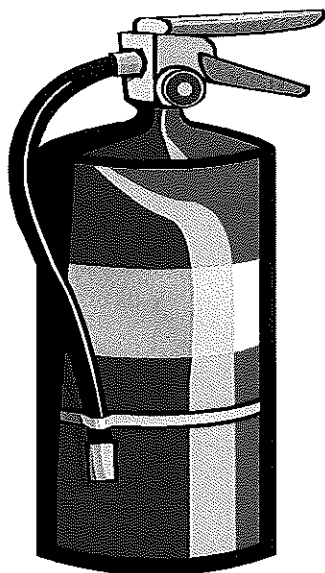


Fire Prevention and Protection Handbook



Fire Prevention and Protection Handbook

Sources of Ignition

Appliances

- Cooking equipment left on stove can overheat or malfunction.

Electrical

Arc

- Defective or worn insulation.
- Equipment not being operated properly.
- Failure or malfunction.
- From operating equipment.

Electrical Components

- Panel boxes
- Cords
- Fixtures
- Power strips

Electrical Panels

- Be unobstructed for 36" in front of and in all directions around the panel for access.
- Have the panel cover and panel door securely in place and closed.
- Have all breakers and main switches clearly marked as to the equipment/area they control.
- Be identifiable as an electrical panel.
- Do not cover or paint electrical panels to match the wall.
- Not be locked unless the key is readily available.
- Breakers are not to be taped or otherwise secured in the "on" position.
- Work is not performed on an electrical panel unless the work is approved and monitored by a licensed electrician.
- Electrical panel/service rooms or closets shall not be used for storage of any kind.
- It is possible that an overload on the electrical system can cause an outlet to spark.

Electrical Outlets

- Have the cover plate securely fastened to the outlet box.
- Be replaced when broken.
- Have an approved cover.
- Combustible items such as trashcans, boxes of papers, etc., should be kept at least two (2) feet from either side of the outlet.

Fixtures and Equipment

- Be tested and approved by a recognized testing laboratory such as Underwriters' Laboratory (UL) or Factory Mutual (FM). The device must bear the appropriate label, sticker, or flag supplied by the manufacturer.
- Electrical decorations or cords may not be used on combustible vegetation, dry trees, curtains or any other combustible material that may be ignited by heat or potential electrical short of the device.
- Extension cords used for temporary use in decorations are limited to 90 days.
- Electrical cords must be one length from the device to the electrical outlet.
- Heat producing devices must be plugged directly into an outlet.
- Electrical decorations must be turned off and should be unplugged at the end of the day.
- Electrical cords must not be laid or taped across floors in such a way that they may cause a tripping hazard or interfere in any way with an evacuation.
- Any electrical fixture, equipment or cord that is damaged, worn, showing signs of overheating, etc., must be taken out of service and repaired or replaced.
- Faulty or misused electrical equipment.
- Friction from drive belts, etc.
- Fueling, improper technique

- Heaters-electrical, gas or oil; fixed or portable; too close to combustibles.
 - Three foot clear area around heaters.
- Hot processes such as welding, grinding or cooking.
- Hot surfaces
- Lighting fixtures
- Machinery mechanical failure or malfunction.
- Metal impact such as metal tools striking each other.
- Naked flames (candles, etc.)
- Smoking materials
- Static electricity
- Ventilation of equipment obstruction (contamination by dust and/or dirt).

Sources of Fuel

- Boxes and bags
- Cabinetry
- Chips, wood
- Clothing
- Cooking oil and materials
- Coverings, floors, ceilings, walls
- Dust, fiber or lint.
- Flammable and combustible gases and solids.
- Flammable and combustible liquid based products such as paints, varnishes, thinners, and adhesives.
- Flammable and combustible liquids and solvents such as gasoline and paraffin.
- Foam such as polystyrene and polyurethane (foam used in upholstered furniture).
- Furniture, fixtures, and fittings
- Hardboard, chipboard, blockboard walls or ceilings
- Loose packing material
- Paper and card
- Plastics and rubber

Sources of Oxygen

- Mechanical air conditioning systems and air handling systems.
- Natural airflow through doors, windows, and other openings.
- Oxygen supplies from cylinder storage and piped systems.
- Oxidizing materials that can provide a fire with additional oxygen and so, assist it to burn. These chemicals should be identified on their container by the manufacturer or supplier who can advise to their safe use and storage.

Storage

- Storage is not in or of itself a fire hazard. Storage becomes a hazard when the following occurs:
 - Items are stored in an improper manner;
 - Items are stored in a hazardous location;
 - Items are stored where other fire hazards are present; and/or
 - Storage impacts the safe evacuation of building occupants.

General Storage

- Any room or building used for the general storage of ordinary combustibles for temporary, long-term or permanent storage.
- Stored materials must be kept at least three (3) feet from any heat source.
- Storage must not block fire extinguishers, fire alarm pull stations, emergency or exit lighting, access to evacuation routes, exit doors, emergency equipment or entry of emergency personnel.
- Storage under stairwells is not permitted.
- Doors to storage rooms must remain closed except when entering or leaving the room.

- Smoking shall not be permitted in any storage area under any conditions.
- Storage shall be prohibited in mechanical and electrical rooms.
- Furnace area shall be clean and uncluttered.

Flammable Storage

- It is critical that flammables not only be used properly, but also stored safely.
- Flammables are to be stored in an approved flammable storage cabinet. This cabinet shall be labeled and shall incorporate self-closing doors.
- Oily or grease-laden rags must be kept in metal, self-closing containers.
- Only flammable storage cabinets meeting NFPA standards will be used.
- Rooms used for storage must be constructed to meet the NFPA requirements for fire separation, ventilation, heating, electrical systems, and fire detection and/or suppression.
- Flammables are not permitted to be stored in basements of buildings.

High Stack/In Rack or Rolling File Storage

- This type of storage has become increasingly popular for space-saving purposes for records and commodities. This also presents a different type of hazard for fire safety.
- It is highly recommended that non-combustible materials be used in the construction of storage racks, to reduce the amount of fire spread should a fire occur.
- High rack or rolling file servers, which due to their configuration and height would prevent automatic sprinkler systems from proper operation, may require "in-rack" sprinklers.
- Storage shall be maintained 2 feet or more below the ceiling in non-sprinkler buildings and 18 inches or more below sprinkler head deflectors in buildings with sprinklers.
- Boiler Rooms, Mechanical Rooms, and Electrical Panel Rooms shall not be used for storage of combustible material.
- There is to be a 36 inch clearance in front of electrical panel boxes, breaker boxes, electrical disconnects, HVAC, hot water heaters, boilers, switchboards, panel boards, etc.
- Aisle widths in high rack storage, which require the use of mechanical devices such as forklifts or carts, will be of sufficient width to allow personnel evacuation if a cart is in the aisle.

Hazardous Materials Storage

Examples-oven cleaners, drain cleaners, ammonia, bleach, spot remover, liquid and dry cleaners, gasoline, solvents, pesticides, paints, paint removers, paint thinners, etc.

- Hazardous products may produce a substantial amount of toxic vapors as well as react with a fire to create a fast moving or explosive situation.
- Hazardous materials shall not be stored within 50 feet of any open flame or heat source.
- Hazardous materials shall not obstruct evacuation routes.
- Storage under stairways is prohibited.
- Smoking is not permitted within 50 feet of hazardous materials storage.

Egress and Exits

Obstructions

- No corridor, aisle way or component of a means of egress may be obstructed.
- Furniture in lobbies must not obstruct the minimum width of egress, and must be arranged so there is a direct path through the lobby to the exit.
- Wires, cables or extension cords may not be laid across corridors, aisles or pathways.
- Exit doors must remain unlocked during hours in which the building is occupied.

Minimum Clear Widths

- Aisles leading to required exits shall be provided from all portions of buildings. The main access aisles must be 44 inches wide.
- Cubicle door width is to be no less than 32 inches.
- Aisles in a single office shall be maintained from any point in the room to the door of that room, minimum clear width of 36 inches wide for new configurations and 28 inches wide for existing configurations.

- Aisles and walkways clear width between furniture are 36 inches for new configurations and 28 inches for existing configurations.
- Aisle clear width between cubicles is 36 inches for new configurations and 28 inches for existing configurations.

Minimum Clear Widths Between Shelves

- Main aisles (principle accessible routes into the shelving area)-44 inches wide.
- Side aisles (run between the shelving units)-44 inches wide.
- End aisles (run perpendicular to side aisles on the outside of the shelving area)-44 inches wide.
- Cross aisles (run perpendicular to side aisles to break up the side aisles into increments)-36 inches wide for new configurations and 28 inches for existing configurations.
- Exit door width when framed by shelves; 36 inches wide with a clear width of 32 inches.

Protrusions

- Minimum ceiling height in exit passageways is 7'6".
- Lights, decorations, signs or any other item hung from the ceiling may not be lower than 6'8".
- Wires or cables hung from the ceiling must not present a safety hazard, such as snagging equipment being transported through the corridor.

Items not permitted in corridors

- Flammable storage cabinets of any size.
- Compressed gas bottles of any size.
- Carts, cabinets, shelves or other items on which combustibles or flammables are likely to be stored.
- Chemicals, munitions, pyrotechnics or any other hazardous material.
- Any item that will impede the normal or emergency flow of traffic or will obstruct any emergency device.
- Portable heaters, coffee pots, food warmers or other devices that may present a hazard.
- Unprotected high voltage, electrical or gas powered equipment of any kind.

Emergency Lights

- Emergency lights should be installed at exits and in exit routes to illuminate the path of travel for the exit served.

Fire Detection, Alarms, and Suppression Systems

- Obstructing – No part of the system may be obstructed at any time.
- Fire alarm pull stations must have a two (2) foot clearance in all directions.
- Fire alarm bells/horns/strobes may not be visually blocked or muffled.
- Smoke/heat/beam detectors may not be visually blocked or muffled.
- Storage may not come within 18" of sprinkler heads.
- Nothing may be hung from or wrapped around any system device or piping.
- Fire department connections must not be obstructed at any time.

Exit Doors

- Exit doors must be kept unlocked from the inside at all time while the building is occupied. Any bars, chains or other devices restricting the use of the exit must be removed during business hours so the exit can be used properly.
- All exit doors must swing in the direction of exit travel when servicing any hazardous area or when servicing an occupant load of 50 or more.

Fire/Smoke Rated Doors

- Blocking fire doors open allows smoke and fire an uncontrolled avenue through the building.
- Fire/smoke rated doors will not be blocked open.
- The self-closing devices may not be disconnected or rendered inoperable.

- If, for special reasons, a rated door must be held open for movement of furniture, equipment or other large size or number of items, the person responsible for the move will provide an individual at the door to ensure the door is not left open if the building is evacuated.
- "Door chocks" or "foot stops" may not be installed or used on any fire rated door.
- Furniture, appliances, etc. may not be used to block the door open.
- Doors that need to be left open for high traffic areas or for visual security will require an automatic magnetic release device installed which will release the door when any emergency alarm device is activated.
- Obstructions that will prohibit fire/smoke rated doors from closing and latching without human intervention are not permitted.

Interior Finishes and Decorations

- Interior decorations are a common factor in the spread of fire. Decorations used during the holiday seasons are always a large concern. It is necessary to ensure that all decorations used meet the requirements of safety and fire resistance.
- Vegetation such as haystacks, leaves, branches, large amounts of plant cuttings, etc., should not be used in or around any building.
- Decorations must not be attached to, hung from, or obstruct any emergency device such as exit lighting, sprinkler heads, etc.
- Combustible decorations must not be hung from ceilings in such a way that a fire could ignite the decorations and endanger the occupants before evacuation.

Fire Extinguishers

- All fire extinguishers must be mounted on the wall with the top not more than 5 feet off the floor, so as to be plainly visible and accessible.
- All fire extinguishers are to receive monthly inspections with documentation of each inspection.
- All fire extinguishers are to receive annual, 6 year, and 12 year maintenance with documentation.
- Employees are to receive annual training in the use of fire extinguishers.

Electrical Extension Cords

- Extension cords shall not be used as a substitute for permanent wiring. These cords are for temporary use only; 90 days or less.
- Extension cords are to be utilized in one continuous length, cords may not be connected, "piggy backed" or spliced together.
- Extension cords shall not be used for fixed or stationary appliances, such as heaters, high wattage lights, microwave ovens, coffee machines, vending machines, refrigerators, etc. Use extension cords on non-heat producing devices (i.e. radios, computers, answering machines, etc.).
- Extension cords shall be plugged directly into an approved receptacle, not into an electrical power strip.
- The load rating of an electrical extension cord shall not be less than the rated capacity of the portable appliance supplied by the cord.
- Extension cords shall be maintained in good condition without splices, deterioration or damage.
- Extension cords and flexible electrical cords shall not be affixed to structures; extended through walls, ceilings, floor, under doors; or under floor coverings.
- Extension cords and flexible electrical cords shall not be subject to environmental or physical damage.
- Multi-plug adapters such as multi-plug extension cords, cube adapters, and two-way to three-way adaptors shall not be used.

Fueled Equipment and Vehicles

- In location where flammable vapors may be present, precautions shall be taken to prevent ignition by eliminating or controlling sources of ignition. Sources of ignition may include open flame, lighting, smoking, cutting and welding, hot surfaces, frictional heat, sparks (static, electrical, and mechanical), spontaneous ignition, chemical and physical/chemical reactions, and radiant heat. (Note: can be used to prohibit gas powered equipment in a building.)

- Fueled equipment, including but not limited to motorcycles, mopeds, lawn-care equipment, and portable cooking equipment, shall not be stored, operated, or repaired within a building except under one of the following: (1) the building or room has been constructed for such use in accordance with the building code; (2) the use is allowed by other provisions of the Fire Code.
- Combustible or flammable liquids are prohibited from being stored in an office or educational occupancy unless in an approved flammable cabinet. this includes fuels contained in weed trimmer, lawn mowers, snow throwers, etc.

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